

The rejection of Claims 1, 2, 4-10, 15, 18-24, 26, and 27 under 35 U.S.C. § 102(b) as being anticipated by Khutoryansky et al. (U.S. Pat. 5,636,259) is respectfully traversed.

Khutoryansky et al. describe a universal X-ray imaging room that includes an X-ray tube head (112) supported from the ceiling (136) by a tube crane (110), a floor-mounted examination table (116) for supporting the patient, an imaging media cassette (128), a digital imaging platform (114) supported by table (116), a wall mounted fixture (124) for supporting an additional imaging media cassette or bucky (126), an X-ray generator (118), and a main control panel (120) including a control system (510). (Col. 8, lines 6-14). Tube crane assembly (110) supports the X-ray tube head (112) and provides translational mount of the X-ray tube head (112). (Col. 8, lines 25-27). The tube crane assembly (110) comprises several cascaded mechanical stages, including a transverse carriage (394), a bridge (144), and a telescoping tub assembly (154), each of which permits movement of the X-ray tube (112). (Col. 8, lines 29-33). First and second spaced parallel supports channels and rails (140 and 142) preferably extend longitudinally along the ceiling (136) and are attached thereto. (Col. 8, lines 35-37). Rotation of X-ray tube head (112) allows the X-ray beam to be directed at various angles, such as toward the table (116) or the wall-mounted bucky (126). Notably, Khutoryansky et al. do not describe an imaging system configured to operate in a plurality of modes of operation including at least three modes and comprising a source assembly and a detector assembly movably attached to the same positioning means.

Claim 1 recites a method of generating an image of an object using a multimode imaging system configured to operate in a plurality of modes of operation, the multimode imaging system including a source assembly, a detector assembly, and a mechanical means for positioning the source assembly and the detector assembly, the source assembly attached to the mechanical means for positioning and including an x-ray source configured to emit x-ray signals, the detector assembly attached to the mechanical means for positioning and including a detector, wherein the method includes "selecting a first mode of operation... mechanical positioning the source assembly and the detector assembly in a first position using the mechanical positioning means for the first mode of operation, wherein the source assembly and the detector assembly are attached to the mechanical positioning means ...selecting a second mode of operation...positioning the source assembly and the detector assembly for the second mode of operation in a second position different from the first

position using the mechanical positioning means, wherein the source assembly and the detector assembly are attached to the mechanical positioning means....”

Khutoryansky et al. do not describe or suggest a method of generating an image of an object using a multimode imaging system configured to operate in a plurality of modes of operation, the multimode imaging system including a source assembly, a detector assembly, and a mechanical means for positioning the source assembly and the detector assembly, the source assembly attached to the mechanical means for positioning and including an x-ray source configured to emit x-ray signals, the detector assembly attached to the mechanical means for positioning and including a detector, wherein the method includes selecting a first mode of operation, positioning the source assembly and the detector assembly in a first position using the mechanical positioning means for the first mode of operation, wherein the source assembly and the detector assembly are attached to the mechanical positioning means, selecting a second mode of operation, and positioning the source assembly and the detector assembly for the second mode of operation in a second position different from the first position using the mechanical positioning means, wherein the source assembly and the detector assembly are attached to the mechanical positioning means. Moreover, Khutoryansky et al. do not describe selecting a first mode of operation, positioning the source assembly and the detector assembly in a first position using the mechanical positioning means for the first mode of operation, wherein the source assembly and the detector assembly are attached to the mechanical positioning means, selecting a second mode of operation, and positioning the source assembly and the detector assembly for the second mode of operation in a second position different from the first position using the mechanical positioning means, wherein the source assembly and the detector assembly are attached to the mechanical positioning means. Rather, Khutoryansky et al. describe a rotatable X-ray tube assembly mounted to the ceiling wherein the detector assembly is positioned within an examination table or a wall-mounted media cassette. For the reasons set forth above, Claim 1 is submitted to be patentable over Khutoryansky et al.

Claim 2 depends directly from independent Claim 1. When the recitations of Claim 2 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 2 is likewise patentable over Khutoryansky et al.

Claim 4 recites an imaging system for generating an image of an object wherein the imaging system is configured to “operate in a plurality of modes of operation including at least three modes and comprising a source assembly comprising a movable x-ray source configured to emit x-ray signals...a detector assembly comprising a movable detector...a mechanical positioning means for positioning said source assembly and said detector assembly relative to the object, said source assembly movably attached to said mechanical positioning means and said detector assembly movably attached to said mechanical positioning means...and a controller enabling an operator to selectively operate said system in a plurality of modes.”

Khutoryansky et al. do not describe or suggest an imaging system configured to operate in a plurality of modes of operation including at least three modes wherein the imaging system includes a source assembly including a movable x-ray source configured to emit x-ray signals, a detector assembly including a movable detector, a mechanical positioning means for positioning the source assembly and the detector assembly relative to the object, the source assembly movably attached to the mechanical positioning means and the detector assembly movably attached to the mechanical positioning means, and a controller enabling an operator to selectively operate the system in a plurality of modes. Moreover, Khutoryansky et al. do not describe an imaging system that is configured to operate in a plurality of modes of operation wherein the imaging system also includes a mechanical positioning means for positioning the source assembly and the detector assembly relative to the object, the source assembly movably attached to the mechanical positioning means and the detector assembly movably attached to the mechanical positioning means. Rather, Khutoryansky et al. describe a rotatable X-ray tube assembly mounted to the ceiling wherein the detector assembly is positioned within an examination table or a wall-mounted media cassette. For the reasons set forth above, Claim 4 is submitted to be patentable over Khutoryansky et al.

Claims 5-10 and 15 depend, directly or indirectly, from independent Claim 4. When the recitations of Claims 5-10 and 15 are considered in combination with the recitations of Claim 4, Applicants submit that dependent Claims 5-10 and 15 likewise are patentable over Khutoryansky et al.

Claim 18 recites “an imaging system for generating an image of an object, said imaging system comprising a base, a mechanical positioning means movably attached to the base, an x-ray source assembly including an x-ray source configured to emit x-ray signals and attached to the mechanical positioning means, and a detector assembly comprising a detector attached to the mechanical positioning means, said the system configured to enable an operator to select a mode of operation from a plurality of modes of the imaging system...alter the position of said detector assembly and said source assembly relative to said other assembly and the object based on the selected mode....”

Khutoryansky et al. do not describe or suggest an imaging system for generating an image of an object, wherein the imaging system includes a base, a mechanical positioning means movably attached to the base, an x-ray source assembly including an x-ray source configured to emit x-ray signals and attached to the mechanical positioning means, and a detector assembly comprising a detector attached to the mechanical positioning means, wherein the system is configured to enable an operator to select a mode of operation from a plurality of modes of the imaging system and alter the position of the detector assembly and the source assembly relative to the other assembly and the object based on the selected mode. Moreover, Khutoryansky et al. do not describe an imaging system for generating an image of an object, wherein the imaging system includes an x-ray source assembly including an x-ray source configured to emit x-ray signals and attached to the mechanical positioning means, and a detector assembly comprising a detector attached to the mechanical positioning means, wherein the system is configured to enable an operator to select a mode of operation from a plurality of modes of the imaging system and alter the position of the detector assembly and the source assembly relative to the other assembly and the object based on the selected mode. Rather, Khutoryansky et al. describe a rotatable X-ray tube assembly mounted to the ceiling wherein the detector assembly is positioned within an examination table or a wall-mounted media cassette. For the reasons set forth above, Claim 18 is submitted to be patentable over Khutoryansky et al.

Claims 19-24, 26, and 27 depend, directly or indirectly, from independent Claim 18. When the recitations of Claims 19-24, 26, and 27 are considered in combination with the recitations of Claim 18, Applicants submit that dependent Claims 19-24, 26, and 27 likewise are patentable over Khutoryansky et al.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1, 2, 4-10, 15, 18-24, 26, and 27 be withdrawn.

The rejection of Claims 4-11 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Baba et al. (U.S. Patent 5,598,453) in view of Roos et al. (U.S. Patent 6,041,097) is respectfully traversed.

Baba et al. describe an x-ray imaging apparatus which includes “an imaging-sequence controller 1, and X-ray tube 2, an X-ray grid 3...a rotary gantry 8, a bed board 9, a gantry rotation controller 10, a board transfer controller 11” (Col. 9, lines 57-62). Baba et al. further describe “the center of a part of the subject 14 to be imaged is set to be in the vicinity of the rotation center of the imaging unit” (Col. 10, lines 6-8). “The imaging-sequence controller 1 defines a movement sequence for rotating the rotary gantry 8 having a pair of X-ray detection unit 4’ and X-ray tube 2 fixed thereto.” (Col. 10, lines 22-24). “The bed board 9 sets a fluoroscopic and radiographic posture of the subject 14. The bed board 9 is horizontally positioned, and in a rotation imaging mode it is moved in a direction parallel to the rotation plane, on which the X-ray detection unit 4’ is mounted” (Col. 10, lines 30-34). “In the case of fluoroscopic or radiographic mode (A), the collected data are displayed on the image display unit 21 (step 305) and at the same time, the bed board and imaging unit are moved for use in the next imaging operation” (Col. 12, lines 27-30). Notably, Baba et al. do not describe an imaging system configured to operate in a plurality of modes of operation including at least three modes and comprising a source assembly and a detector assembly movably attached to the same positioning means.

Roos et al. describe “a large diameter track 10, on the order of 1.5 meters, is stationarily mounted to the floor...the track is a large diameter bearing whose outer race 12 is stationarily supported by a stationary support 14 and whose inner race 16 is freely rotatable within the outer race. An x-ray tube 18 is mounted to the inner race for rotation therein. A flat panel detector 20 is mounted to the inner race opposite the x-ray source” (Col. 3, lines 36-44). Roos et al. also describe “A drive motor 22 is connected with the inner race for indexing the x-ray tube and flat panel detector to selectable angular orientations around a central axis of the ring” (Col. 3, lines 51-52). “At each step, the timing and control circuit causes an x-ray tube power supply (32) to pulse the x-ray tube at radiographic energy levels in a radiographic mode of operation, and fluoroscopic energy levels in a fluoroscopic mode

of operation" (Col. 3, lines 56-62). "The resolution of the acquired image data is adjustable by adjusting the displacement of the flat panel detector from the subject. More specifically, a mechanical drive 50 moves the flat panel detector toward and away from a subject" (Col. 4, lines 31-35). Notably, Roos et al. do not describe an imaging system configured to operate in a plurality of modes of operation including at least three modes and comprising a source assembly and a detector assembly movably attached to the same positioning means.

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Neither Baba et al. nor Roos et al., considered alone or in combination, describe nor suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Baba et al. with Roos et al., because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching. Rather, only the conclusory statement that "[i]t would have been obvious to one skilled in the art at the time the invention was made to (1) movably couple the source assembly with the detector assembly to the mechanical positioning means, since a person would be motivated to alter the magnification in order to examine small regions in detail; and (2) substitute a detector panel for an image intensifier, since a person would be motivated [to] replace the image intensifier, which is likely to produce distorted images due to its electron imaging system" suggests combining the disclosures.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicant's disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection appears to be based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically Baba et al. is cited for its teaching that when an X-ray apparatus is in fluoroscopic or radiographic mode, the bed board is horizontally positioned, and in a rotation imaging mode it is moved in a direction parallel to the rotation plane, and Roos et al. is cited for its teaching of a flat detector panel. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection of be withdrawn.

Further, and to the extent understood, neither Baba et al. nor Roos et al., alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 4 recites an imaging system for generating an image of an object wherein the imaging system is configured to "operate in a plurality of modes of operation including at least three modes and comprising a source assembly comprising a movable x-ray source configured to emit x-ray signals...a detector assembly comprising a movable detector...a mechanical positioning means for positioning said source assembly and said detector assembly relative to the object, said source assembly movably attached to said mechanical positioning means and said detector assembly movably attached to said mechanical positioning means...and a controller enabling an operator to selectively operate said system in a plurality of modes."

Neither Baba et al. or Roos et al., alone or in combination, describe or suggest an imaging system for generating an image of an object wherein the imaging system is configured to operate in a plurality of modes of operation including at least three modes and wherein the imaging system includes a source assembly including a movable x-ray source

configured to emit x-ray signals, a detector assembly including a movable detector, a mechanical positioning means for positioning the source assembly and the detector assembly relative to the object, and wherein the source assembly is movably attached to the mechanical positioning means and the detector assembly is movably attached to the mechanical positioning means, and a controller enabling an operator to selectively operate the system in a plurality of modes. Moreover, neither Baba et al. nor Roos et al. describe or suggest an imaging system configured to operate in a plurality of modes of operation including at least three modes wherein the imaging system includes a controller enabling an operator to selectively operate the system in a plurality of modes and a mechanical positioning means for positioning the source assembly and the detector assembly relative to the object, and wherein the source assembly is movably attached to the mechanical positioning means and the detector assembly is movably attached to the mechanical positioning means. Rather Baba et al. describe system while in fluoroscopic or radiographic mode, the bed board is horizontally positioned, and in a rotation imaging mode it is moved in a direction parallel to the rotation plane, and Roos et al. describe that a flat panel detector is mounted to the inner race opposite the x-ray source, and that a control circuit causes an x-ray tube power supply to pulse the x-ray tube at radiographic energy levels in a radiographic mode of operation, and fluoroscopic energy levels in a fluoroscopic mode of operation, and that the resolution can be increased by moving the detector. For the reasons set forth above, Claim 4 is submitted to be patentable over Baba et al. in view of Roos et al.

Claims 5-11 and 17 depend, directly or indirectly, from independent Claim 4. When the recitations of Claims 5-11 and 17 are considered in combination with the recitations of Claim 4, Applicants submit that dependent Claims 5-11 and 17 likewise are patentable over Baba et al. in view of Roos et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 4-11 and 17 be withdrawn.

The rejection of Claims 15 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Baba et al. in view of Roos et al. as applied to Claim 4 is respectfully traversed.

Baba et al. and Roos et al. are described above.



Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Neither Baba et al. nor Roos et al., considered alone or in combination, describe nor suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Baba et al. with Roos et al., because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching. Rather, only the conclusory statement that "[i]t would have been obvious to one skilled in the art at the time the invention was made to replace the gantry C-arm, since a person would be motivated to substitute a less expensive, but functionally equivalent apparatus for a more expensive one" suggests combining the disclosures.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicant's disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection appears to be based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically Baba et al. is cited for its teaching that when an X-ray apparatus is in fluoroscopic or radiographic mode, the bed board is

horizontally positioned, and in a rotation imaging mode it is moved in a direction parallel to the rotation plane, and Roos et al. is cited for its teaching of a flat detector panel. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection of be withdrawn.

Further, and to the extent understood, neither Baba et al. nor Roos et al., alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 4 recites an imaging system for generating an image of an object wherein the imaging system is configured to "operate in a plurality of modes of operation including at least three modes and comprising a source assembly comprising a movable x-ray source configured to emit x-ray signals...a detector assembly comprising a movable detector...a mechanical positioning means for positioning said source assembly and said detector assembly relative to the object, said source assembly movably attached to said mechanical positioning means and said detector assembly movably attached to said mechanical positioning means...and a controller enabling an operator to selectively operate said system in a plurality of modes."

Neither Baba et al. or Roos et al., alone or in combination, describe or suggest an imaging system for generating an image of an object wherein the imaging system is configured to operate in a plurality of modes of operation including at least three modes and wherein the imaging system includes a source assembly including a movable x-ray source configured to emit x-ray signals, a detector assembly including a movable detector, a mechanical positioning means for positioning the source assembly and the detector assembly relative to the object, and wherein the source assembly is movably attached to the mechanical positioning means and the detector assembly is movably attached to the mechanical positioning means, and a controller enabling an operator to selectively operate the system in a plurality of modes. Moreover, neither Baba et al. nor Roos et al. describe or suggest an imaging system configured to operate in a plurality of modes of operation including at least three modes wherein the imaging system includes a controller enabling an operator to selectively operate the system in a plurality of modes and a mechanical positioning means for positioning the source assembly and the detector assembly relative to the object, and wherein

the source assembly is movably attached to the mechanical positioning means and the detector assembly is movably attached to the mechanical positioning means. Rather Baba et al. describe in fluoroscopic or radiographic mode, the bed board is horizontally positioned, and in a rotation imaging mode it is moved in a direction parallel to the rotation plane, and Roos et al. describe that a flat panel detector is mounted to the inner race opposite the x-ray source, and that a control circuit causes an x-ray tube power supply to pulse the x-ray tube at radiographic energy levels in a radiographic mode of operation, and fluoroscopic energy levels in a fluoroscopic mode of operation, and that the resolution can be increased by moving the detector. For the reasons set forth above, Claim 4 is submitted to be patentable over Baba et al. in view of Roos et al.

Claims 15 and 16 depend, directly or indirectly, from independent Claim 4. When the recitations of Claims 15 and 16 are considered in combination with the recitations of Claim 4, Applicants submit that dependent Claims 15 and 16 likewise are patentable over Baba et al. in view of Roos et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 15 and 16 be withdrawn.

The rejection of Claims 28 and 29 under 35 U.S.C. § 103(a) as being unpatentable over Khutoryansky et al. as applied to Claim 27 and further in view of Roos et al. is respectfully traversed.

Khutoryansky et al. and Roos et al. are described above.

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Neither Khutoryansky et al. nor Roos et al., considered alone or in combination, describe nor suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Khutoryansky et al. with Roos et al., because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching. Rather, only the

conclusory statement that "[i]t would have been obvious to one skilled in the art at the time the invention was made to substitute a detector panel for an image intensifier, since a person would be motivated [to] replace the image intensifier, which is likely to produce distorted images due to its electron imaging system" suggests combining the disclosures.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicant's disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection appears to be based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically Khutoryansky et al. is cited for its teaching that when an X-ray apparatus is in fluoroscopic or radiographic mode, the bed board is horizontally positioned, and in a rotation imaging mode it is moved in a direction parallel to the rotation plane, and Roos et al. is cited for its teaching of a flat detector panel. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection of be withdrawn.

Further, and to the extent understood, neither Khutoryansky et al. nor Roos et al., alone or in combination, describe or suggest the claimed combination, and as such, the

presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 18 recites “an imaging system for generating an image of an object, said imaging system comprising a base, a mechanical positioning means movably attached to the base, an x-ray source assembly including an x-ray source configured to emit x-ray signals and attached to the mechanical positioning means, and a detector assembly comprising a detector attached to the mechanical positioning means, wherein the system is configured to enable an operator to select a mode of operation from a plurality of modes of the imaging system...alter the position of said detector assembly and said source assembly relative to said other assembly and the object based on the selected mode...”

Neither Khutoryansky et al. or Roos et al., alone or in combination, describe or suggest an imaging system for generating an image of an object, wherein the imaging system includes a base, a mechanical positioning means movably attached to the base, an x-ray source assembly including an x-ray source configured to emit x-ray signals and attached to the mechanical positioning means, and a detector assembly comprising a detector attached to the mechanical positioning means, wherein the system is configured to enable an operator to select a mode of operation from a plurality of modes of the imaging system and alter the position of the detector assembly and the source assembly relative to the other assembly and the object based on the selected mode. Moreover, neither Khutoryansky et al. nor Roos et al. describe an imaging system for generating an image of an object, wherein the imaging system includes an x-ray source assembly including an x-ray source configured to emit x-ray signals and attached to the mechanical positioning means, and a detector assembly comprising a detector attached to the mechanical positioning means, wherein the system is configured to enable an operator to select a mode of operation from a plurality of modes of the imaging system and alter the position of the detector assembly and the source assembly relative to the other assembly and the object based on the selected mode. Rather Khutoryansky et al. describe a system while in fluoroscopic or radiographic mode, the bed board is horizontally positioned, and in a rotation imaging mode it is moved in a direction parallel to the rotation plane, and Roos et al. describe that a flat panel detector is mounted to the inner race opposite the x-ray source, and that a control circuit causes an x-ray tube power supply to pulse the x-ray tube at radiographic energy levels in a radiographic mode of operation, and fluoroscopic energy levels in a fluoroscopic mode of operation, and that the resolution can be increased by moving the detector. For the reasons set forth above, Claim 18 is submitted to be patentable over Khutoryansky et al. in view of Roos et al.

Claims 28 and 29 depend, directly or indirectly, from independent Claim 18. When the recitations of Claims 28 and 29 are considered in combination with the recitations of Claim 18, Applicants submit that dependent Claims 28 and 29 likewise are patentable over Khutoryansky et al. in view of Roos et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 28 and 29 be withdrawn.

The objection to Claims 3, 12-14, 20, 25, and 30-35 is respectfully traversed.

Claim 3 was objected to as being dependent upon a rejected base claim, but was indicated as being allowable if rewritten in independent form. Claim 3 depends from independent Claim 1 which is submitted to be in condition for allowance. When the recitations of Claim 3 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 3 likewise is in condition for allowance.

Claims 12-14 were objected to as being dependent upon a rejected base claim, but were indicated as being allowable if rewritten in independent form. Claims 12-14 depend from independent Claim 4 which is submitted to be in condition for allowance. When the recitations of Claims 12-14 are considered in combination with the recitations of Claim 4, Applicants submit that dependent Claims 12-14 likewise are in condition for allowance.

Claims 20, 25, and 30-35 were objected to as being dependent upon a rejected base claim, but were indicated as being allowable if rewritten in independent form. Claims 20, 25, and 30-35 depend from independent Claim 18 which is submitted to be in condition for allowance. When the recitations of Claims 20, 25, and 30-35 are considered in combination with the recitations of Claim 18, Applicants submit that dependent Claims 20, 25, and 30-35 likewise are in condition for allowance.

For the reasons set forth above, Applicants respectfully request that the objection to Claims 3, 12-14, 20, 25, and 30-35 be withdrawn.

With respect to newly added Claim 36, Applicants respectfully submit that none of the cited art describes a method of generating an image of an object using a multimode imaging system configured to operate in a plurality of modes of operation including at least three modes, the multimode imaging system including a source assembly including an x-ray

source configured to emit x-ray signals, a detector assembly including a detector, and a mechanical means for positioning the source assembly and the detector assembly, wherein the method includes "attaching the source assembly to the mechanical means for positioning...attaching the detector assembly to the mechanical means for positioning...selecting a first mode of operation...positioning the source assembly and the detector assembly in a first position for the first mode of operation...selecting a second mode of operation...positioning the source assembly and the detector assembly for the second mode of operation in a second position different from the first position...and generating an image of the object for each determined mode of operation." Therefore, Applicants submit that Claim 36 is patentable over the cited art.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Robert F. Senzig, et al.

Art Unit: 2882

Serial No.: 09/451,965

Examiner: Allen C. Ho

Filed: November 30, 1999

For: IMAGING SYSTEM FOR  
GENERATING HIGH QUALITY  
IMAGES

SUBMISSION OF MARKED UP CLAIMS

Box RCE  
Hon. Commissioner for Patents  
Washington, D.C. 20231

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Submitted herewith are marked up claims in accordance with 37 C.F.R.  
1.121(c)(1)(ii), wherein additions are underlined and deletions are [bracketed].

IN THE CLAIMS

1. (twice amended) A method of generating an image of an object using a multimode imaging system configured to operate in a plurality of modes of operation including at least three modes, the multimode imaging system including a source assembly, a detector assembly, and a mechanical means for positioning the source assembly and the detector assembly, the source assembly [coupled]attached to the mechanical means for positioning and including an x-ray source configured to emit x-ray signals, the detector assembly [coupled]attached to the mechanical means for positioning and including a detector, said method comprising the steps of:

selecting a first mode of operation;

positioning the source assembly and the detector assembly in a first position using the mechanical positioning means for the first mode of operation, wherein the source assembly and the detector assembly are attached to the mechanical positioning means;

selecting a second mode of operation;



positioning the source assembly and the detector assembly for the second mode of operation in a second position different from the first position using the mechanical positioning means, wherein the source assembly and the detector assembly are attached to the mechanical positioning means; and

generating an image of the object for each determined mode of operation.

4. (twice amended) An imaging system for generating an image of an object, said imaging system configured to operate in a plurality of modes of operation including at least three modes and comprising:

a source assembly comprising a movable x-ray source configured to emit x-ray signals;

a detector assembly comprising a movable detector;

a mechanical positioning means for positioning said source assembly and said detector assembly relative to the object, said source assembly movably [coupled]attached to said mechanical positioning means and said detector assembly movably [coupled]attached to said mechanical positioning means; and

a controller enabling an operator to selectively operate said system in a plurality of modes and generate an image of the object for each determined mode of operation.

18. (twice amended) An imaging system for generating an image of an object, said imaging system comprising a base, a mechanical positioning means movably [coupled]attached to said base, an x-ray source assembly comprising an x-ray source configured to emit x-ray signals and [coupled]attached to said mechanical positioning means, and a detector assembly comprising a detector [coupled]attached to said mechanical positioning means, said system configured to:

enable an operator to select a mode of operation from a plurality of modes of the imaging system;

alter the position of said detector assembly and said source assembly relative to said other assembly and the object based on the selected mode; and

generate an image of the object.

Respectfully Submitted,



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